Patent Claims

1. Controlled acoustic waveguide of the type of an elongate hollow chamber (1), which is connected to a sound-transmifting duct (4) via an opening (2) on its first end surface (3), **characterised** in that the longitudinal resonances of said hollow chamber (1) are tunable to a sound spectrum to be attenuated, by detecting the membrane vibrations by means of a microphone (10) located directly in front of the membrane (8) of at least one loudspeaker (9) on the second end surface (6) of said hollow chamber (1), and by inverting the microphone signal by means of an amplifier (11) and by feedback of the inverted microphone signal to said loudspeaker (9) in an amplified form in dependence on a signal from a sensor (12), which is characteristic of the sound in said duct (4).

2. Controlled waveguide according to Claim 1, **characterised** in that said opening (23) is provided with a sound-transmifting protective cover (5) made of a perforated sheet, a non-woven material or sheet materials.

3. Controlled waveguide according to Claims 1 and 2, **characterised** in that said hollow chamber (1) projects orthogonally or obliquely from said duct (4) or conforms to the straight or bent wall of the duct.

4. Controlled waveguide according to the Claims 1 to 3, **characterised** in that a thermal insulating layer (13)

is provided between the duct wall and the wall of said hollow chamber when said hollow chamber (1) conforms to the wall of said duct (4).

5. Controlled waveguide according to the Claims 1 to 4, **characterised** in that the wall of said hollow chamber (1) are provided with cooling elements (11) either over part of their surface or their entire surface.

6. Controlled waveguide according to the Claims 1 to 5, **characterised** in that a forced cooling (15) means of the type of a thermal exchanger or Peltier elements is provided in said hollow chamber (1).

7. Controlled waveguide according to the Claims 1 to 6, **characterised** in that said hollow chamber (1) is subdivided into tubes of different lengths by means of a transverse partitioning.

8. Controlled waveguide according to the Claims 1 to 7, **characterised** in that the walls of said hollow chamber (1) are provided with a sound absorptive cladding (17) either over parts of their surface or their entire surface.

9. Controlled waveguide according to the Claims 1 to 7, **characterised** in that temperature sensors, rotational speed sensors as well as measuring elements for the gas flow of burners and exhaust gas systems are employed as sensor (12) for the sound spectrum occurring in said duct (4).

10. Controlled waveguide according to the Claims 1 to 9, **characterised** in that several controlled waveguides are used on several side walls of ducts (4) having a rectangular cross-section.

11. Controlled waveguide according to the Claims 1 to 9, **characterised** in that a c circular hollow chamber (1) is used which extends along the periphery about a cylindrical duct (4).

12. Controlled waveguide according to the Claims 1, 2 and 6 to 9, **characterised** in that the controlled waveguide presents an aerodynamically expedient design and is positioned in the manner of a central slide inside a large rectangular or cylindrical duct (4).

13. Controlled waveguide according to the Claims 1 and 3 to 9, **characterised** in that an acoustically effective membrane or plate instead of said sound-transmitting opening (2) constitutes the communication with said duct (4).